Falls City, Texas, Disposal Site

FACT SHEET

This fact sheet provides information about the Uranium Mill Tailings Radiation Control Act of 1978 Title I disposal site located at Falls City, Texas. The site is managed by the U.S. Department of Energy Office of Legacy Management.

Site Description and History

The Falls City Disposal Site is the location of a former uranium-ore processing facility in Karnes County, Texas, approximately 40 miles southeast of San Antonio and approximately 8 miles southwest of Falls City. The mesquite-dominated woodlands and cleared ranchlands surrounding the site are used primarily for agriculture and are sparsely populated.

Susquehana-Western, Inc., constructed the original mill and operated the facility from 1961 to 1973. Uranium extracted from sandstone ore with a sulfuric acid leaching process created approximately 3.1 million tons of radioactive mill tailings, a predominantly sandy material, that were deposited in unlined open-pit uranium mines on the site. Between 1978 and 1982, Solution Engineering, Inc., conducted solution mining to extract uranium from some of the tailings in the pits using a system of injection and recovery wells. Fluid from this leaching process was pumped to a pond in one of the tailings pits. In 1982, the pond fluid was evaporated, and the tailings were covered with soil, which was planted with native grasses.

The U.S. Department of Energy (DOE) remediated the Falls City site and contaminated vicinity properties between 1992 and 1994. Surface remediation consisted of consolidating and encapsulating all contaminated material on site in an engineered disposal cell. The disposal cell occupies 127 acres of a 231-acre tract of land.

Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA) in 1978 (Public Law 95-604), which required the cleanup of 24 inactive uranium-ore processing sites. DOE remediated these sites in accordance with standards promulgated by the U.S. Environmental Protection Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192. Subpart A of 40 CFR 192 regulates surface cleanup and disposal cell performance, and Subpart B regulates cleanup of contaminated ground water at the processing sites. DOE encapsulated the radioactive materials in U.S. Nuclear Regulatory Commission-approved

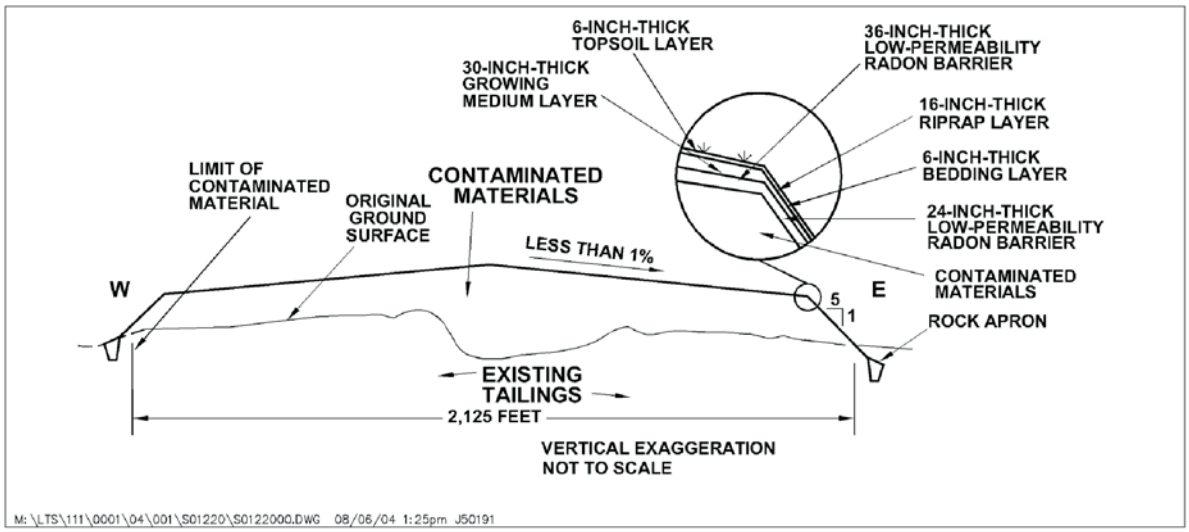
Location of the Falls City Disposal Site

disposal cells. The U.S. Nuclear Regulatory Commission general license for UMTRCA Title I sites is established in 10 CFR 40.27. The Falls City Disposal Site was included under the general license in 1997.

Disposal Site

The disposal cell was closed in 1994 upon completion of consolidation of tailings and contaminated materials from the site and vicinity properties and construction of the cell cover. All remediated areas were regraded and reseeded. The disposal cell contains 7.1 million dry tons (about 5.1 million cubic yards) of contaminated material, with a total activity of 1,277 curies of radium-226.

The site is situated on sand, silt, and clay deposits of the Whittset Formation, which dips gently southeast. Two members of the Whittset Formation, the Deweesville and Conquista, lie within 30 feet of the surface and are grouped together as a single aquifer because no continuous impermeable strata separate them. The Dilworth Sandstone member of the Whittset



West-East Cross Section of Falls City Disposal Cell

is considered a second aquifer beneath the site. The Dilworth aquifer is separated from the Deweesville/Conquista aquifer by 30 to 50 feet of clay that acts as an aquitard that prevents downward seepage. However, commercial uranium exploration in the area during the 1950s and 1960s resulted in a number of improperly plugged boreholes that created a potential hydraulic connection between the Deweesville/Conquista aquifer and the Dilworth aquifer. Consequently, the Dilworth is included as part of the uppermost aquifer. Ground water in these aquifers is classified as Class III, unsuitable for agricultural or domestic use because of widespread naturally occurring contamination and low yield. Naturally elevated levels of sulfate, total dissolved solids, and uranium are present in ground water in the region.

Compliance Strategy

The ground water compliance strategy for the uppermost aquifer at the Falls City site is no remediation with application of supplemental standards. Supplemental standards may be applied at locations where ground water is classified as limited use (not a current or potential source of drinking water) because it meets any of several criteria. At the Falls City site, ground water is classified as limited use because of widespread ambient contamination not related to milling activities that cannot be cleaned up using treatment methods reasonably employed in public water systems (40 CFR 192.11[e][2]). DOE monitors ground water at the Falls City site as a best management practice to demonstrate the initial performance of the disposal cell and to ensure that potential users of ground water downgradient from the site are not exposed to processing-related contamination. Ground water samples are collected from the Conquista and Deweesville sandstone units and from the underlying Dilworth aquifer.

Disposal Cell Design

The rectangular disposal cell measures approximately 2,600 feet by 2,200 feet (including the rock toe apron) at the base. The cell rises approximately 62 feet above the surrounding terrain.

The cover of the Falls City disposal cell is a multicomponent system designed to encapsulate and protect the contaminated materials. The disposal cell cover comprises (1) a low-permeability radon barrier of compacted clayey soil (36 inches thick on the top slopes and 24 inches thick on the side slopes; first layer placed over compacted tailings), (2) a 6-inch-thick layer of compacted soil, and (3) a 30-inch growing medium layer and a 6-inch topsoil layer) that covers the top of the cell. Grass established on the top slopes of the cell returns water to the atmosphere through evapotranspiration. A rock (riprap) erosion-protection layer overlies a layer of granular bedding material on the side slopes of the cell.

A 20-foot-wide rock apron surrounds the toe of the cell. The cell was designed to promote the rapid runoff of precipitation to the apron to minimize leachate. A posted security fence encloses the cell.

Legacy Management Activities

DOE is responsible for ensuring that the selected ground water compliance strategy at the Falls City site continues to be protective of human health and the environment.

DOE manages the disposal site according to a site-specific Long-Term Surveillance Plan to ensure that the disposal cell systems continue to prevent release of contaminants to the environment. Under provisions of this plan, DOE conducts annual inspections of the site to evaluate the condition of surface features, cuts the grass for hay and controls other vegetation, performs

other site maintenance as necessary, and monitors ground water to ensure the continued integrity of the disposal cell. The encapsulated materials will remain potentially hazardous for thousands of years.

In accordance with 40 CFR 192.32, the disposal cell is designed to be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years. However, the general license has no expiration date, and DOE's responsibility for the safety and integrity of the Falls City Disposal Site will last indefinitely.

Contacts

Site-specific documents related to the Falls City Disposal Site are available on the DOE Office of Legacy Management website at http://www.LM.doe.gov/land/sites/tx/falls_city/falls.htm.

For more information about DOE Office of Legacy Management activities at the Falls City Disposal Site, contact

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